



A.D. 1858, 28th JULY. N° 1700.

SPECIFICATION

OF

RALPH HOWARTH.

FURNACES FOR STEAM BOILERS.

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,  
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:

PUBLISHED AT THE GREAT SEAL PATENT OFFICE,  
25, SOUTHAMPTON BUILDINGS, HOLBORN.

1859.





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### Furnaces for Steam Boilers.

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*(This Invention received Provisional Protection, but notice to proceed with the application for Letters Patent was not given within the time prescribed by the Act.)*

**PROVISIONAL SPECIFICATION** left by Ralph Howarth at the Office of the Commissioners of Patents, with his Petition, on the 28th July 1858.

I, RALPH HOWARTH, of the firm of Howarth and Cryer, Slater Field 5 Foundry, Bolton-le-Moors, in the County of Lancaster, Millwrights and Engineers, do hereby declare the nature of the said Invention for “**IMPROVEMENTS IN FURNACES FOR STEAM BOILERS FOR THE PURPOSE OF CONSUMING SMOKE AND ECONOMISING FUEL,**” to be as follows :—

The nature of my Invention consists in so arranging and constructing the 10 furnaces of steam boilers that the smoke from a fire to which fresh fuel has been applied is conveyed over a fire, on which the fuel is in an incandescent state. This Invention is particularly applicable to boilers having two fire-places and two flues. The end of each flue is furnished with a damper, and these dampers are raised and lowered alternately. When fresh fuel is applied 15 to one fire, the damper at the end of the corresponding flue is lowered to prevent the escape of the smoke into the chimney ; the smoke from the fresh fuel is conveyed through a side passage between the two fire-places or through a flue made near the firing doors over the other fire, which is in an incandescent state ; by this means the smoke is consumed, and a saving in fuel is 20 effected. When the fire by which the smoke has been consumed requires to



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*Howarth's Impts. in Furnaces for Steam Boilers for Consuming Smoke, &c.*

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be supplied with fresh fuel, the position of the dampers is reversed. When my Invention is applied to a boiler having two fire-places uniting in a single flue, it is necessary to divide the single flue by means of a fire-brick partition or a water space partition, and when a single broad fire-place is used, the fire must be divided into two in a similar manner.

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